

ABSTRACT

An ultra-miniature magnetic device generally comprises a conductive winding and a magnetic core. The conductive winding includes an upper conductor and a lower conductor. The magnetic core is of an elongate rectangular or oval shape having two elongate sections and two short sections. The lower conductor is preferably positioned below the elongate sections of the magnetic core while the upper conductor is preferably positioned above the elongate sections of the magnetic core. The lower and upper conductors are electrically connected by conducting via structures that are formed in sequential steps using semiconductor processing technology. The result is a coil winding around the elongate sections, with the short sections being preferably free of windings. The process provides an advantage of avoiding shorting between the via structures and the magnetic core caused by overetching when etching the via holes.